**Prostate Cancer – Transurethral Resection and Enucleation Histopathology Reporting Guide**

 **Elements in black text are CORE Elements in grey text are NON-CORE o indicates single select values □ indicates multi-select values**

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| --- | --- |
| Definition of Core elements | CORE elements are those which are essential for the clinical management, staging or prognosis of the cancer. These elements will either have evidentiary support at Level III-2 or above (based on prognostic factors in the National Health and Medical Research Council (NHMRC) levels of evidence1). In rare circumstances, where level III-2 evidence is not available an element may be made a core element where there is unanimous agreement by the Dataset Authoring Committee (DAC). Molecular and immunohistochemical testing is a growing feature of cancer reporting. However, in many parts of the world this type of testing is limited by the available resources. In order to encourage the global adoption of ancillary tests for patient benefit, International Collaboration on Cancer Reporting (ICCR) includes the most relevant ancillary testing in ICCR Datasets as CORE elements, especially when they are necessary for the diagnosis. Where the technical capability does not yet exist, laboratories may consider temporarily using these data elements as NON-CORE items.The summation of all CORE elements is considered to be the minimum reporting standard for a specific cancer.**Reference** 1 Merlin T, Weston A and Tooher R (2009). Extending an evidence hierarchy to include topics other than treatment: revising the Australian 'levels of evidence'. *BMC Med Res Methodol* 9:34.  |
| Definition of Non-core elements | NON-CORE elements are those which are unanimously agreed should be included in the dataset but are not supported by level III-2 evidence. These elements may be clinically important and recommended as good practice but are not yet validated or regularly used in patient management.Key information other than that which is essential for clinical management, staging or prognosis of the cancer such as macroscopic observations and interpretation, which are fundamental to the histological diagnosis and conclusion e.g., macroscopic tumour details, may be included as either CORE or NON-CORE elements by consensus of the DAC. |
| Scope of this dataset | The dataset has been developed for the examination of transurethral resection or enucleation (suprapubic/simple/open prostatectomy or laser enucleation) specimens of the prostate. The dataset applies to invasive carcinomas of the prostate gland. Core biopsies and radical prostatectomy specimens are dealt with in separate ICCR datasets.1,2 Urothelial carcinomas arising in the bladder or urethra are dealt with in separate datasets.3,4 Rare urothelial carcinomas arising within the prostate are included in a separate ICCR dataset.4The second edition of this dataset includes changes to align the dataset with the World Health Organization (WHO) Classification of Tumours, Urinary and Male Genital Tumours, 5th edition, 2022.5 The ICCR dataset includes 5th edition Corrigenda, July 2024.6 In development of this dataset, the DAC considered evidence up until July 2024.**References** 1International Collaboration on Cancer Reporting (2024). *Prostate Core Needle Biopsy Histopathology Reporting Guide. 2nd edition.* Available from: https://www.iccr-cancer.org/datasets/published-datasets/urinary-male-genital/prostate-biopsy/ (Accessed 30th November 2024). 2 International Collaboration on Cancer Reporting (2024). *Prostate Cancer Radical Prostatectomy Histopathology Reporting Guide*. Available from:https://www.iccr-cancer.org/datasets/published-datasets/urinary-male-genital/prostate-rad-pros/ (Accessed 30th November 2024). 3 International Collaboration on Cancer Reporting (2024). *Carcinoma of the bladder - cystectomy, cystoprostatectomy and diverticulectomy specimen Histopathology Reporting Guide. 2nd edition*. Available from: https://www.iccr-cancer.org/datasets/published-datasets/urinary-male-genital/bladder/ (Accessed 2nd July 2024).4 International Collaboration on Cancer Reporting (2024). *Carcinoma of the urethra - urethrectomy specimen Histopathology Reporting Guide. 2nd edition*. Available from: https://www.iccr-cancer.org/datasets/published-datasets/urinary-male-genital/urethra-urethrectomy/ (Accessed 2nd July 2024).5 WHO Classification of Tumours Editorial Board (2022). *Urinary and Male Genital Tumours, WHO Classification of Tumours, 5th edition, Volume 8*, IARC Publications, Lyon. 6 WHO Classification of Tumours Editorial Board (2022). *Urinary and Male Genital Tumours, WHO Classification of Tumours, 5th edition, Volume 8 - Corrigenda July 2024.* Available from: file:///C:/Users/fleurw/Downloads/Uro5%20Corrigenda%20doc\_2024-07-08%20(1).pdf (Accessed 2nd July 2024).  |

| **Core/** **Non-core** | **Element name** | **Values** | **Commentary** | **Implementation notes** |
| --- | --- | --- | --- | --- |
| Core and Non-core | CLINICAL INFORMATION | * Information not provided
* Information provided

(select all that apply)* Previous history of prostate cancer (including the

Gleason score or WHO/ISUP Grade/Grade Group of previous specimens if known), *specify** Previous biopsy*, specify date and where performed*
* Previous therapy, *specify*
* Other clinical information, *specify*
 | It is the responsibility of the clinician requesting the pathological examination of a specimen to provide information that will have an impact on the diagnostic process or affect its interpretation. The use of a standard pathology requisition/request form including a checklist of important clinical information is strongly encouraged to help ensure that relevant clinical data is provided by the clinicians with the specimen. Information about prior biopsies or treatment aids interpretation of the microscopic findings and accurate pathological diagnosis. In patients with known prostate cancer, uncommonly undergoing transurethral resection of the prostate (TURP) or enucleation procedure, the Gleason grade and score in any previously submitted specimen should be provided by the clinician as this may allow assessment of any progression of the tumour.There is a growing number of patients with low to intermediate risk prostate cancers on active surveillance (AS).1-4 These patients usually undergo yearly follow-up biopsies, but these patients may uncommonly undergo TURP or enucleation procedure for benign prostatic hyperplasia (BPH) or lower urinary tract obstruction.5,6 Prostate cancer can also be managed by non- or minimally invasive therapies, such as radiation, hormonal or ablative therapies.3,7-10 Radiation therapy for prostate cancer has a profound effect on the morphology of both cancer and benign prostatic tissue. Likewise, neoadjuvant androgen deprivation therapy (ADT) may induce morphological changes in both prostate cancer and benign tissue.8-11 Hence, in TURP or enucleation specimens undertaken following either radiotherapy or ADT, tumours that show significant treatment effects should not be graded. There is an increasing use of ablative therapies especially for intermediate risk prostate cancers as an alternative for surgery.3,8,9,12 Examples of these minimally invasive therapies are high intensity focused ultrasound (HIFU), cryotherapy, interstitial laser ablation, and photodynamic therapy. This treated cancer is rarely encountered in TURP or enucleation specimens. Unlike in radiotherapy or ADT, most residual cancer after ablative therapies can be graded.Uncommonly, patients with high risk or advanced prostate cancers may undergo tumour debulking by TURP to relieve urinary obstruction. These cancers may have been treated with chemotherapy and immunotherapy.13,14**References** 1 Lam TBL, MacLennan S, Willemse PM, Mason MD, Plass K, Shepherd R, Baanders R, Bangma CH, Bjartell A, Bossi A, Briers E, Briganti A, Buddingh KT, Catto JWF, Colecchia M, Cox BW, Cumberbatch MG, Davies J, Davis NF, De Santis M, Dell'Oglio P, Deschamps A, Donaldson JF, Egawa S, Fankhauser CD, Fanti S, Fossati N, Gandaglia G, Gillessen S, Grivas N, Gross T, Grummet JP, Henry AM, Ingels A, Irani J, Lardas M, Liew M, Lin DW, Moris L, Omar MI, Pang KH, Paterson CC, Renard-Penna R, Ribal MJ, Roobol MJ, Rouprêt M, Rouvière O, Sancho Pardo G, Richenberg J, Schoots IG, Sedelaar JPM, Stricker P, Tilki D, Vahr Lauridsen S, van den Bergh RCN, Van den Broeck T, van der Kwast TH, van der Poel HG, van Leenders G, Varma M, Violette PD, Wallis CJD, Wiegel T, Wilkinson K, Zattoni F, N'Dow JMO, Van Poppel H, Cornford P and Mottet N (2019). 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The critical role of the pathologist in determining eligibility for active surveillance as a management option in patients with prostate cancer: consensus statement with recommendations supported by the College of American Pathologists, International Society of Urological Pathology, Association of Directors of Anatomic and Surgical Pathology, the New Zealand Society of Pathologists, and the Prostate Cancer Foundation. *Arch Pathol Lab Med* 138(10):1387-1405.3 Mottet N, van den Bergh RCN, Briers E, Van den Broeck T, Cumberbatch MG, De Santis M, Fanti S, Fossati N, Gandaglia G, Gillessen S, Grivas N, Grummet J, Henry AM, van der Kwast TH, Lam TB, Lardas M, Liew M, Mason MD, Moris L, Oprea-Lager DE, van der Poel HG, Rouvière O, Schoots IG, Tilki D, Wiegel T, Willemse PM and Cornford P (2021). EAU-EANM-ESTRO-ESUR-SIOG Guidelines on Prostate Cancer-2020 Update. Part 1: Screening, Diagnosis, and Local Treatment with Curative Intent. *Eur Urol* 79(2):243-262.4 Eastham JA, Auffenberg GB, Barocas DA, Chou R, Crispino T, Davis JW, Eggener S, Horwitz EM, Kane CJ, Kirkby E, Lin DW, McBride SM, Morgans AK, Pierorazio PM, Rodrigues G, Wong WW and Boorjian SA (2022). Clinically Localized Prostate Cancer: AUA/ASTRO Guideline, Part II: Principles of Active Surveillance, Principles of Surgery, and Follow-Up. *J Urol* 208(1):19-25.5 Schober JP, Stensland KD, Moinzadeh A, Canes D and Mandeville J (2023). Holmium laser enucleation of the prostate in men on active surveillance for prostate cancer with refractory lower urinary tract symptoms secondary to enlarged prostates. *Prostate* 83(1):39-43.6 Elsaqa M, Slade A, Lingeman J, Piroozi A, Wagner K, Jhavar S and El Tayeb MM (2023). Holmium Laser Enucleation of Prostate in Patients with Pre-Existing Localized Prostate Cancer, Dual Center Study. *J Endourol* 37(3):330-334.7 Eastham JA, Auffenberg GB, Barocas DA, Chou R, Crispino T, Davis JW, Eggener S, Horwitz EM, Kane CJ, Kirkby E, Lin DW, McBride SM, Morgans AK, Pierorazio PM, Rodrigues G, Wong WW and Boorjian SA (2022). Clinically Localized Prostate Cancer: AUA/ASTRO Guideline. Part III: Principles of Radiation and Future Directions. *J Urol* 208(1):26-33.8 Evans AJ (2018). Treatment effects in prostate cancer. *Mod Pathol* 31(S1):S110-121.9 Collins K and Cheng L (2022). Morphologic spectrum of treatment-related changes in prostate tissue and prostate cancer: an updated review. *Hum Pathol* 127:56-66.10 Srigley JR, Delahunt B and Evans AJ (2012). Therapy-associated effects in the prostate gland. *Histopathology* 60(1):153-165.11 Têtu B (2008). 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| Non-core | PRE-PROCEDURE SERUM PSA | \_\_\_ ng/mL | The clinician requesting the pathological examination should provide information on the pre-transurethral resection/enucleation serum prostate-specific antigen (PSA) level, if measured. The use of a standard pathology requisition/request form including a checklist of important clinical information is strongly encouraged to help ensure that relevant clinical data is provided by the clinicians with the specimen and its use. If the patient is on 5-alpha-reductase inhibitor medications, such as finasteride or dutasteride, this should be recorded as it may lower serum PSA levels and affect interpretation of serum PSA values for detecting prostate cancer.1,2**References** 1 Marberger M, Freedland SJ, Andriole GL, Emberton M, Pettaway C, Montorsi F, Teloken C, Rittmaster RS, Somerville MC and Castro R (2012). Usefulness of prostate-specific antigen (PSA) rise as a marker of prostate cancer in men treated with dutasteride: lessons from the REDUCE study. *BJU Int* 109(8):1162-1169.2 Kang HW, Chae MH, Park SH, Seo SP, Kim WT, Kim YJ, Yun SJ, Lee SC, Yoon TY and Kim WJ (2017). Change in Prostate Specific Antigen Concentration in Men with Prostate Specific Antigen Less than 2.5 ng/ml Taking Low Dose Finasteride or Dutasteride for Male Androgenetic Alopecia. *J Urol* 198(6):1340-1345.  |  |
| Non-core | CLINICAL STAGE | *Text* | In the large majority of cases these procedures are performed for the relief of BPH when it is not anticipated that there will be a cancer present and clinical stage is not applicable; if cancer is found on microscopic examination in this situation it will be assigned to category T1.1-3 In the small number of cases in which it is known that there is prostate cancer present, a TURP or enucleation procedure may be done to relieve an obstruction where a patient is not amenable to other procedures. These may either be patients with low risk prostate cancer on active surveillance being treated for non-tumoral obstruction (e.g., BPH), or patients with high risk or advanced prostate cancer undergoing debulking to relieve obstruction by the tumour. In these cases, the clinical stage may be more relevant.4,5**References** 1 Brierley JD, Gospodarowicz MK and Wittekind C (eds) (2016). *Union for International Cancer Control.* *TNM Classification of Malignant Tumours, 8th Edition*, Wiley, USA.2 Amin MB, Edge SB, Greene FL, Byrd DR, Brookland RK, Washington MK, Gershenwald JE, Compton CC, Hess KR, Sullivan DC, Jessup JM, Brierley JD, Gaspar LE, Schilsky RL, Balch CM, Winchester DP, Asare EA, Madera M, Gress DM and Meyer LR (eds) (2017). *AJCC Cancer Staging Manual. 8th ed.*, Springer, New York.3 Paner GP, Stadler WM, Hansel DE, Montironi R, Lin DW and Amin MB (2018). Updates in the Eighth Edition of the Tumor-Node-Metastasis Staging Classification for Urologic Cancers. *Eur Urol* 73(4):560-569.4 Schober JP, Stensland KD, Moinzadeh A, Canes D and Mandeville J (2023). Holmium laser enucleation of the prostate in men on active surveillance for prostate cancer with refractory lower urinary tract symptoms secondary to enlarged prostates. *Prostate* 83(1):39-43.5 Elsaqa M, Slade A, Lingeman J, Piroozi A, Wagner K, Jhavar S and El Tayeb MM (2023). Holmium Laser Enucleation of Prostate in Patients with Pre-Existing Localized Prostate Cancer, Dual Center Study. *J Endourol* 37(3):330-334.  |  |
| Core | OPERATIVE PROCEDURE | * Not specified
* Transurethral resection
* Enucleation (suprapubic/ simple/open prostatectomy)
* Other, *specify*
 | Information regarding the nature of the surgical procedure undertaken is generally regarded as a core element in International Collaboration on Cancer Reporting (ICCR) datasets since it allows the morphological findings to be placed in context.Surgical therapies for BPH, such as TURP or enucleation, take prostate tissues mainly from the transition zone.1,2 Enucleation can also be performed using laser, such as by holmium laser enucleation of the prostate (HoLEP) or thalium laser enucleation of the prostate (ThuLEP). Choice of surgical procedure can be influenced by the size of the prostate. Simple prostatectomy can be done on large prostates while TURP is done on average or smaller size prostates. HoLEP can be performed regardless of prostate size and removes more tissue fragments. Most incidental prostate cancers encountered in these settings are of lower risk categories. Incidental prostate cancer has been reported in 5%-14% of TURP and 5.6%-23.3% of HoLEP.3Transurethral resection of the prostate (TURP) or enucleation performed for tumour debulking or to relieve tumour obstruction yields higher grade or stage prostate cancers.**References** 1 Lerner LB, McVary KT, Barry MJ, Bixler BR, Dahm P, Das AK, Gandhi MC, Kaplan SA, Kohler TS, Martin L, Parsons JK, Roehrborn CG, Stoffel JT, Welliver C and Wilt TJ (2021). Management of Lower Urinary Tract Symptoms Attributed to Benign Prostatic Hyperplasia: AUA GUIDELINE PART II-Surgical Evaluation and Treatment. *J Urol* 206(4):818-826.2 Gravas S, Malde S, Cornu JN, Gacci M, Gratzke C, Herrmann TRW, Karavitakis M, Mamoulakis C, Rieken M, Sakalis VI, Schouten N, Smith EJ, Speakman MJ, Tikkinen KAO, Alivizatos G, Bach T, Bachmann A, Descazeaud A, Desgrandchamps F, Drake M, Emberton M, Kyriazis I, Madersbacher S, Michel MC, N'Dow J, Perachino M, Plass K, Rioja Sanz C, Umbach R, de Wildt M, Oelke M and de la Rosette J (2024). From BPH to male LUTS: a 20-year journey of the EAU guidelines. *Prostate Cancer Prostatic Dis* 27(1):48-53.3 Yilmaz M, Toprak T, Suarez-Ibarrola R, Sigle A, Gratzke C and Miernik A (2022). Incidental prostate cancer after holmium laser enucleation of the prostate-A narrative review. *Andrologia* 54(3):e14332.  |  |
| Core | SPECIMEN WEIGHT | \_\_\_ g* Cannot be assessed, *specify*
 | The specimen weight is the best estimate of the amount of tissue resected and received by the pathology laboratory for examination and current histological sampling guidelines are based on this parameter.1,2The specimen may be weighed in either the operating theatre or in the pathology laboratory.Specimen submission for histological examination is influenced by the weight of the specimen. Traditionally, submitting 12 grams of prostate tissue plus 1 cassette per additional 5 grams has been followed.3 Later studies that consider proper resource utilisation recommend a more conservative sampling of the prostate specimens. One study on TURP suggested that if minimal cancer is found on the first 6 cassettes (equivalent to about 10-12 grams of tissue), it is unlikely that there will be change in the grade and volume of the tumour with the additional sections.1 A later study on TURP and HoLEP, suggested a minimum of 10 cassettes as a reasonable threshold.4 However, additional studies are needed to standardise the submission of prostate specimens with incidental cancer.**References** 1 Trpkov K, Thompson J, Kulaga A and Yilmaz A (2008). How much tissue sampling is required when unsuspected minimal prostate carcinoma is identified on transurethral resection? *Arch Pathol Lab Med* 132(8):1313-1316.2 Paner GP, Magi-Galluzzi C, Amin MB and Srigley JR: Adenocarcinoma of the prostate. In: Amin MB, Grignon DJ, Srigley JR and Eble JN (eds). Urological Pathology. Philadelphia, PA: Lippincott William & Wilkins; 2014:559-673.3 Humphrey PA and Walther PJ (1993). Adenocarcinoma of the prostate. I. Tissue sampling considerations. *Am J Clin Pathol* 99(6):746-759.4 Köllermann J, Hoeh B, Ruppel D, Smith K, Reis H, Wenzel M, Preisser F, Kosiba M, Mandel P, Karakiewicz PI, Becker A, Chun FKH, Wild P and Kluth LA (2022). The significance of the extent of tissue embedding for the detection of incidental prostate carcinoma on transurethral prostate resection material: the more, the better? *Virchows Arch* 481(3):387-396.  |  |
| Non-core | SPECIMEN DIMENSIONS |  \_\_\_ mm x \_\_\_ mm x \_\_\_ mm | Information regarding the size of the specimen received is non-core. This is reported for enucleation, suprapubic and open prostatectomy specimens only. Enucleation (simple prostatectomy or laser enucleation specimens) are often received in pieces and only the largest piece or pieces need to be measured.  | Enucleation/suprapubic/open prostatectomy specimens only. |
| Non-core | BLOCK IDENTIFICATION KEY | List overleaf or separately with an indication of the nature andorigin of all tissue blocks. | The origin/designation of all tissue blocks should be recorded. This information should ideally be documented in the final pathology report and is particularly important should the need for internal or external review arise. The reviewer needs to be clear about the origin of each block in order to provide an informed specialist opinion. If this information is not included in the final pathology report, it should be available on the laboratory computer system and relayed to the reviewing pathologist. It may be useful to have a digital image of the specimen and record of the origin of the tumour blocks in some cases.Recording the origin/designation of tissue blocks also facilitates retrieval of blocks for further immunohistochemical or molecular analysis, research studies or clinical trials.  |  |
| Core  | HISTOLOGICAL TUMOUR TYPE | (select all that apply)* Adenocarcinoma (Acinar, usual type)
* Other, *specify*
 | The vast majority (>95%) of prostate cancers are acinar adenocarcinomas.1,2 Other types and subtypes of carcinoma are rarer but must be recorded if present, since some, such as ductal adenocarcinoma, sarcomatoid carcinoma and pleomorphic giant cell carcinoma, have a significantly poorer prognosis. The tumour type should be assigned in line with the 2022 World Health Organization (WHO) Classification and mixtures of different types should be indicated (Table 1).3 Subtypes of prostate carcinoma (under acinar adenocarcinoma in Table 1) are often identified in combination with acinar type adenocarcinoma, and in such cases the tumour type should be classified according to the subtype(s) present. **Table 1** (See end of the document for Tables)**References** 1 WHO Classification of Tumours Editorial Board (2022). *Urinary and Male Genital Tumours, WHO Classification of Tumours, 5th edition, Volume 8*, IARC Publications, Lyon.2 Paner GP, Magi-Galluzzi C, Amin MB and Srigley JR: Adenocarcinoma of the prostate. In: Amin MB, Grignon DJ, Srigley JR and Eble JN (eds). Urological Pathology. Philadelphia, PA: Lippincott William & Wilkins; 2014:559-673.3 Kench JG, Berney DM, De Marzo A, et al. Prostatic acinar adenocarcinoma. In: *Urinary and Male Genital Tumours, WHO Classification of Tumours, 5th edition, Volume 8*, IARC Publications, Lyon; 2022; 203-219.4 Fritz A, Percy C, Jack A,  Shanmugaratnam K, Sobin L, Parkin DM  and Whelan S (eds) (2020). *International Classification of Diseases for Oncology, Third edition, Second revision ICD-O-3.2*. Available from: http://www.iacr.com.fr/index.php?option=com\_content&view=category&layout=blog&id=100&Itemid=577 (Accessed 2nd July 2024).5 WHO Classification of Tumours Editorial Board (2022). *Urinary and Male Genital Tumours, WHO Classification of Tumours, 5th edition, Volume 8 - Corrigenda July 2024.* Available from:file:///C:/Users/fleurw/Downloads/Uro5%20Corrigenda%20doc\_2024-07-08%20(1).pdf (Accessed 2nd July 2024).  | Note that permission to publish the WHO Classification of Tumours may be needed in your implementation. It is advisable to check with the International Agency for Research on Cancer (IARC). |
| Core and Non-core | HISTOLOGICAL TUMOUR GRADE | **Gleason score**Primary pattern/grade* ≤3
* 4
* 5

Highest remaining pattern/grade* ≤3
* 4
* 5
* Indeterminate, *specify reason*

**WHO/ISUP Grade (Grade Group)*** WHO/ISUP Grade (Grade Group) 1 (Gleason score ≤6)
* WHO/ISUP Grade (Grade Group) 2 (Gleason score 3+4=7)
* WHO/ISUP Grade (Grade Group) 3 (Gleason score 4+3=7)
* WHO/ISUP Grade (Grade Group) 4 (Gleason score 8)
* WHO/ISUP Grade (Grade Group) 5 (Gleason score 9-10)
* Indeterminate, *specify reason*

**Percentage Gleason pattern 4***(Applicable for Gleason score 3+4=7 or WHO/ISUP Grade 2)** 1-5%
* 6-10%
* 11-20%
* 21-30%
* 31-40%
* 41-50%

**Percentage Gleason pattern 4***(Applicable for WHO/ISUP Grade ≥3)*\_\_\_ %**Percentage Gleason pattern 5***(Applicable for WHO/ISUP Grade ≥4)*\_\_\_ % | The Gleason grading system is the foundation of grading for prostatic adenocarcinoma.1-4 Prostate cancer in TURP is graded according to similar principles as in core needle biopsies since, like needle biopsies, TURP does not sample the entire tumour. Since TURP mainly samples the transition zone, cancers arising in this part of the prostate are over-represented. However, peripheral zone tissue is sometimes also resected and large peripheral zone cancers may involve the transition zone.5 Thus, TURP specimens include the same spectrum of cancers as needle biopsies, albeit with a different distribution. For example, small low grade transition zone cancers are more often detected by TURP than by needle biopsies. In staging, presence of WHO/International Society of Urological Pathology (ISUP) Grade 2 or higher cancers in TURP upgrades the tumour to stage II stressing the impact of grade in staging.6,7 In terms of T category, derivation of T1a versus T1b is based on 5% cut-off that is not impacted by grade.It has been demonstrated that the Gleason score of cancer detected at TURP predicts cancer-specific survival8,9 and local progression.9-11 Grading of cancer in TURP specimens was not specifically addressed in the ISUP 2005, 2014 and 2019 modifications and 2019 Genitourinary Pathology Society (GUPS) ‘White paper’.12-15 Many of societies’ recommendations were incorporated in the 4th and 5th editions of the WHO classifications.16,17 In one study, however, conventional Gleason score was compared to modified Gleason score including the highest Gleason grade regardless of amount.10 Both were independent predictors of cancer-specific survival in multivariate analysis but conventional Gleason score showed slightly stronger correlation with outcome.No studies have been done on the validity of the WHO/ISUP grading system on TURP detected cancer but there is no reason to assume that this grading would not be valid when applied on TURP specimens. Moreover, the issue of how to deal with tertiary patterns is unresolved as there is not enough evidence at present to prove its validity. It is therefore required that the WHO/ISUP Grade (Grade Group) should be reported together with the Gleason score. Percent Gleason patterns 4 and 5 has been reported to predict cancer-specific survival independently of Gleason score in TURP.10 The prognostic significance of increasing amount of Gleason pattern 4 has been shown in prostate biopsies and radical prostatectomy.18-20 The 2019 ISUP Consensus Conference and GUPS ‘White paper’ recommended that the percentage of Gleason pattern 4 be reported in cases with WHO/ISUP Grades 2 or 3 in prostate biopsies, and such should also apply for TURP and enucleation specimens.12,14 Since clinical use of this information in biopsy has been mainly for active surveillance, reporting of percentage Gleason pattern 4 is currently required only for Gleason score 3+4=7 tumours in prostate biopsy and TURP or enucleation specimens.Transurethral resection of the prostate (TURP) is sometimes done for palliative reasons in patients with locally advanced prostate cancer. These cancers have usually been treated with ADT and a common reason for the TURP is that the tumour has become hormone refractory. It is important that information about the hormonal treatment is given on the request form. Prostate cancer showing morphological signs of hormonal treatment should not be graded as the treatment effect can mimic a higher grade. However, these tumours are almost invariably high grade cancers. The WHO/ISUP grades and associated definitions are outlined in Table 2. Both the Gleason score and the WHO/ISUP Grade (Grade Group) should always be reported for the sake of clarity. **Table 2** (See end of the document for Tables)**References** 1 Srigley JR, Delahunt B, Samaratunga H, Billis A, Cheng L, Clouston D, Evans A, Furusato B, Kench J, Leite K, MacLennan G, Moch H, Pan CC, Rioux-Leclercq N, Ro J, Shanks J, Shen S, Tsuzuki T, Varma M, Wheeler T, Yaxley J and Egevad L (2019). Controversial issues in Gleason and International Society of Urological Pathology (ISUP) prostate cancer grading: proposed recommendations for international implementation. *Pathology* 51(5):463-473.2 Paner GP, Gandhi J, Choy B and Amin MB (2019). Essential Updates in Grading, Morphotyping, Reporting, and Staging of Prostate Carcinoma for General Surgical Pathologists. *Arch Pathol Lab Med* 143(5):550-564.3 Epstein JI (2018). Prostate cancer grading: a decade after the 2005 modified system. *Mod Pathol* 31(S1):S47-63.4 Kweldam CF, van Leenders GJ and van der Kwast T (2019). 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| Core andNon-core | TUMOUR GROWTH PATTERNS | **Intraductal carcinoma of the prostate (IDC-P) AND/OR Invasive cribriform carcinoma (ICC)** * Indeterminate
* Not identified
* Present

If present, specify the tumour growth pattern (if apparent on H&E staininga)**IDC-P*** Not identified
* Present
* IDC-P incorporated into Gleason score
* IDC-P not incorporated into Gleason score

**Invasive cribriform carcinoma***(Applicable for Gleason score 7 or 8)** Not identified
* Present
 | Several studies have shown the importance of invasive cribriform carcinoma (ICC) and intraductal carcinoma of prostate (IDC-P) as independent adverse prognosticators.1-4 Both the 2019 International Society of Urological Pathology (ISUP Consensus Conference and 2019 GUPS ‘White paper’ recommended reporting of these two elements in biopsies and radical prostatectomies with prostate cancer.5,6 While the findings of the tumour growth patterns are uncommon in TURP or enucleation specimens, there presence should also be reported.**Intraductal carcinoma of the prostate (IDC-P) (Non-core)**Intraductal carcinoma of prostate (IDC-P) is an uncommon finding in TURP and enucleation specimen and is usually associated with invasive prostate cancer. IDC-P is strongly associated with high volume, high grade invasive prostate carcinoma and metastatic disease.6-9 Hence, the presence of IDC-P in TURP or enucleation specimens should be reported.Intraductal carcinoma of prostate (IDC-P) has been well characterised at the histological and molecular levels over the past decade and its clinical significance is now better understood.10 In the 5th edition of the WHO Classification of Tumours the essential diagnostic criteria for IDC-P are: 1) expansile epithelial proliferation in the pre-existing duct-acinar system; 2) lumen spanning solid, cribriform and/or comedo patterns; 3) loose cribriform or micropapillary patterns with enlarged pleomorphic nuclei; and 4) residual basal cells.11 Desirable diagnostic criteria include immunohistochemistry demonstrating at least partial basal cell retention.12,13In terms of grading, it is recommended that pure IDC-P without invasive should not be graded. However, there is controversy in terms of grading IDC-P with invasive cancer.14,15 ISUP recommended incorporating IDC-P into grade whereas GUPS recommended excluding IDC-P from grading of invasive cancer. The prostate transurethral resection and enucleation dataset allows either manner of grading invasive cancer with IDC-P, however, the approach should be documented in the report.Distinction between ICC and IDC-P should be made based on morphology. Use of immunohistochemistry for basal cell markers to distinguish these two growth patterns is not recommended. It is important to distinguish IDC-P from atypical intraductal proliferation (AIP) and high grade prostatic intraepithelial neoplasia (HGPIN).16 Compared to IDC-P, AIP and HGPIN have less architectural and cytological atypia.**Invasive cribriform carcinoma (ICC) (Non-core)**Invasive cribriform carcinoma (ICC) is one of the basic architectures for Gleason pattern 4. Presence of luminal necrosis upgrades the cribriform gland to Gleason pattern 5. Among the Gleason pattern 4 architectures, cribriform morphology has been shown to be associated with higher biochemical recurrence rate or poorer survival after radical prostatectomy or radiotherapy. Many of these findings were shown in Gleason score 7 prostate cancers.9,17-20 Both small and large cribriform glands are associated with poorer outcome, although the definition of small or large cribriform is still under debate.21-23 To improve interobserver agreement, ISUP has proposed a definition for cribriform pattern as a confluent sheet of contiguous malignant epithelial cells with multiple glandular lumina that are easily visible at low power (objective magnification X10) and that there should be no intervening stroma or mucin separating individual or fused glandular structures.24 **References** 1 Iczkowski KA, Paner GP and Van der Kwast T (2018). 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| Core | PROSTATIC TISSUE INVOLVED BY TUMOUR | Prostatic tissue involved by tumour measured on the basis of area*(TURP or enucleation/suprapubic prostatectomy specimens)** 1% - 5%
* 6% - 10%
* 11% - 20%
* 21% - 30%
* 31% - 40%
* 41% - 50%
* 51% - 60%
* 61% - 70%
* 71% - 80%
* 81% - 90%
* >90%

ORProstatic tissue involved by tumour measured on the basis of number of chips *(TURP specimens only)** 1% - 5%
* 6% - 10%
* 11% - 20%
* 21% - 30%
* 31% - 40%
* 41% - 50%
* 51% - 60%
* 61% - 70%
* 71% - 80%
* 81% - 90%
* >90%
 | In the TNM classification, incidentally detected cancer is substaged into cT1a (≤5% cancer) and cT1b (>5% cancer) based on the involvement of resected tissue.1,2 This substaging predicts cancer progression and disease-specific survival.1-6The TNM classification does not specify how tumour extent should be measured, but the reported percentage of extent is commonly assumed to be calculated as the fraction of total tissue area in the sections. It has been proposed that the percentage of number of chips positive for cancer over total number of chips be reported. With this method 10% involvement was a more useful cut-off for prediction of outcome than 5%.6 This is expected as the percentage gets higher when a chip is considered positive regardless of the extent of cancer involvement. The advantage of this method is that it is simpler than estimating percentage of tissue area, but there is also a risk of overestimation when only a minute focus of cancer is present in several chips. Either of these measures can be used but the report should specify what method was used. Percentage of positive chips can obviously not be used for open prostatectomy specimens and percent cancer of the total surface area in the sections should then be reported. Whichever of these methods is used, for practical purposes it is only necessary to estimate the extent of tumour involvement to the nearest 10%, or for small tumours to state if the tumour comprises <5% of the specimen. **References**1 Brierley JD, Gospodarowicz MK and Wittekind C (eds) (2016). *Union for International Cancer Control.* *TNM Classification of Malignant Tumours, 8th Edition*, Wiley, USA.2 Amin MB, Edge SB, Greene FL, Byrd DR, Brookland RK, Washington MK, Gershenwald JE, Compton CC, Hess KR, Sullivan DC, Jessup JM, Brierley JD, Gaspar LE, Schilsky RL, Balch CM, Winchester DP, Asare EA, Madera M, Gress DM and Meyer LR (eds) (2017). *AJCC Cancer Staging Manual. 8th ed.*, Springer, New York.3 Tombal B, De Visccher L, Cosyns JP, Lorge F, Opsomer R, Wese FX and Van Cangh PJ (1999). Assessing the risk of unsuspected prostate cancer in patients with benign prostatic hypertrophy: a 13-year retrospective study of the incidence and natural history of T1a-T1b prostate cancers. *BJU Int* 84(9):1015-1020.4 Robinson D, Aus G, Bak J, Gorecki T, Herder A, Rosell J and Varenhorst E (2007). Long-term follow-up of conservatively managed incidental carcinoma of the prostate: a multivariate analysis of prognostic factors. *Scand J Urol Nephrol* 41(2):103-109.5 Foucar E, Haake G, Dalton L, Pathak DR and Lujan JP (1990). The area of cancer in transurethral resection specimens as a prognostic indicator in carcinoma of the prostate: a computer-assisted morphometric study. *Hum Pathol* 21(6):586-592.6 Rajab R, Fisher G, Kattan MW, Foster CS, Moller H, Oliver T, Reuter V, Scardino PT, Cuzick J and Berney DM (2011). An improved prognostic model for stage T1a and T1b prostate cancer by assessments of cancer extent. *Mod Pathol* 24(1):58-63.  |  |
| Non-core | EXTRAPROSTATIC EXTENSION | * Not identified
* Present
 | Extraprostatic extension (EPE) is now the accepted terminology and replaces earlier ambiguous terms, such capsular penetration, perforation, or invasion.1-3 In radical prostatectomy specimens EPE is an independent prognostic indicator of increased risk of recurrence post radical prostatectomy and is important in assignment of the Union for International Cancer Control (UICC)/American Joint Committee on Cancer (AJCC) T category.1,2,4,5 There is limited data specifically on the significance of EPE in TURP or enucleation specimens given that it is relatively uncommon. However, it may occasionally be seen and should be reported when present since it indicates that the tumour is at least T3a in the TNM system. In TURP specimens it is defined as tumour admixed with adipocytes.The presence of bladder neck smooth muscle involvement by carcinoma in a TURP specimen may indicate that the tumour is at least category T3a. Typically it is a high grade cancer infiltrating among well-formed and thick smooth muscle bundles with absence of normal prostate glands or stroma. These bladder neck chips are often admixed with chips showing either cancer in the prostate or just normal prostate tissue. However, identification of bladder smooth muscles in TURP can be challenging and caution should be made in reporting their involvement. Reporting of this element is optional (non-core).**References**1 Brierley JD, Gospodarowicz MK and Wittekind C (eds) (2016). *Union for International Cancer Control.* *TNM Classification of Malignant Tumours, 8th Edition*, Wiley, USA.2 Amin MB, Edge SB, Greene FL, Byrd DR, Brookland RK, Washington MK, Gershenwald JE, Compton CC, Hess KR, Sullivan DC, Jessup JM, Brierley JD, Gaspar LE, Schilsky RL, Balch CM, Winchester DP, Asare EA, Madera M, Gress DM and Meyer LR (eds) (2017). *AJCC Cancer Staging Manual. 8th ed.*, Springer, New York.3 Magi-Galluzzi C, Evans AJ, Delahunt B, Epstein JI, Griffiths DF, van der Kwast TH, Montironi R, Wheeler TM, Srigley JR, Egevad LL and Humphrey PA (2011). International Society of Urological Pathology (ISUP) Consensus Conference on Handling and Staging of Radical Prostatectomy Specimens. Working group 3: extraprostatic extension, lymphovascular invasion and locally advanced disease. *Mod Pathol* 24(1):26-38.4 Wheeler TM, Dillioglugil O, Kattan MW, Arakawa A, Soh S, Suyama K, Ohori M and Scardino PT (1998). Clinical and pathological significance of the level and extent of capsular invasion in clinical stage T1-2 prostate cancer. *Hum Pathol* 29(8):856-862.5 Epstein JI, Partin AW, Sauvageot J and Walsh PC (1996). Prediction of progression following radical prostatectomy. A multivariate analysis of 721 men with long-term follow-up. *Am J Surg Pathol* 20(3):286-292.  |  |
| Non-core | SEMINAL VESICLE INVASION | * Not identified
* Present
 | Seminal vesicle invasion (SVI) is rarely identified in TURP or enucleation specimens, hence its absence does not need to be explicitly stated. If seminal vesicle/ ejaculatory duct invasion is present, it should be recorded. Seminal vesicle invasion (SVI) is defined as involvement of the muscular wall of the extraprostatic portion of the seminal vesicle.1 If seminal vesicle tissue is present and involved by tumour, this should be reported since it indicates that the tumour may be pT3b in the UICC/AJCC Staging System.2,3However, in TURP and enucleation specimens it is often difficult to distinguish between extraprostatic seminal vesicle and intraprostatic seminal vesicle or ejaculatory duct tissue, and it is important not to over interpret invasion of the latter two structures as SVI since their involvement by tumour does not constitute pT3b disease. If there is doubt as to whether the involved tissue represents the extraprostatic seminal vesicle or the intraprostatic seminal vesicle/ejaculatory duct, this should be stated in the report and SVI should not be definitively diagnosed.**References**1 Berney DM, Wheeler TM, Grignon DJ, Epstein JI, Griffiths DF, Humphrey PA, van der Kwast T, Montironi R, Delahunt B, Egevad L and Srigley JR (2011). International Society of Urological Pathology (ISUP) Consensus Conference on Handling and Staging of Radical Prostatectomy Specimens. Working group 4: seminal vesicles and lymph nodes. *Mod Pathol* 24(1):39-47.2 Brierley JD, Gospodarowicz MK and Wittekind C (eds) (2016). *Union for International Cancer Control.* *TNM Classification of Malignant Tumours, 8th Edition*, Wiley, USA.3 Amin MB, Edge SB, Greene FL, Byrd DR, Brookland RK, Washington MK, Gershenwald JE, Compton CC, Hess KR, Sullivan DC, Jessup JM, Brierley JD, Gaspar LE, Schilsky RL, Balch CM, Winchester DP, Asare EA, Madera M, Gress DM and Meyer LR (eds) (2017). *AJCC Cancer Staging Manual. 8th ed.*, Springer, New York.  |  |
| Non-core | LYMPHOVASCULAR INVASION | * Not identified
* Present
 | Lymphovascular invasion (LVI) is rarely identified in core needle biopsies, hence its absence does not need to be explicitly stated. However, if LVI is present it should be recorded. Since invasion of lymphatic or blood vessels (i.e., thin-walled endothelial-lined spaces) is uncommonly identified in TURP specimens and there is little published data on its significance specifically relating to TURP specimens. However, there is good evidence that LVI identified at radical prostatectomy is an independent prognosticator associated with adverse pathology, increased recurrence, metastasis and poorer outcome including those receiving radiotherapy.1-5 Therefore, if LVI is identified in a TURP or enucleation specimens it may well be significant and its presence should be recorded. The presence of LVI does not affect assignment of the UICC/AJCC T category.6,7**References** 1 Sathianathen NJ, Furrer MA, Mulholland CJ, Katsios A, Soliman C, Lawrentschuk N, Peters JS, Zargar H, Costello AJ, Hovens CM, Bishop C, Rao R, Tong R, Steiner D, Moon D, Thomas BC, Dundee P, Calero JAR, Thalmann GN and Corcoran NM (2023). Lymphovascular Invasion at the Time of Radical Prostatectomy Adversely Impacts Oncological Outcomes. *Cancers (Basel)* 16(1).2 Kawase M, Ebara S, Tatenuma T, Sasaki T, Ikehata Y, Nakayama A, Toide M, Yoneda T, Sakaguchi K, Teishima J, Makiyama K, Inoue T, Kitamura H, Saito K, Koga F, Urakami S and Koie T (2024). Prognostic Importance of Lymphovascular Invasion for Specific Subgroup of Patients with Prostate Cancer After Robot-Assisted Radical Prostatectomy (The MSUG94 Group). *Ann Surg Oncol* 31(3):2154-2162.3 Jamil M, Rakic N, Sood A, Keeley J, Modonutti D, Novara G, Jeong W, Menon M, Rogers CG and Abdollah F (2021). Impact of Lymphovascular Invasion on Overall Survival in Patients With Prostate Cancer Following Radical Prostatectomy: Stage-per-Stage Analysis. *Clin Genitourin Cancer* 19(5):e319-e325.4 Jeong JU, Nam TK, Song JY, Yoon MS, Ahn SJ, Chung WK, Cho IJ, Kim YH, Cho SH, Jung SI and Kwon DD (2019). Prognostic significance of lymphovascular invasion in patients with prostate cancer treated with postoperative radiotherapy. *Radiat Oncol J* 37(3):215-223.5 Kang YJ, Kim HS, Jang WS, Kwon JK, Yoon CY, Lee JY, Cho KS, Ham WS and Choi YD (2017). Impact of lymphovascular invasion on lymph node metastasis for patients undergoing radical prostatectomy with negative resection margin. *BMC Cancer* 17(1):321.6 Brierley JD, Gospodarowicz MK and Wittekind C (eds) (2016). *Union for International Cancer Control.* *TNM Classification of Malignant Tumours, 8th Edition*, Wiley, USA.7 Amin MB, Edge SB, Greene FL, Byrd DR, Brookland RK, Washington MK, Gershenwald JE, Compton CC, Hess KR, Sullivan DC, Jessup JM, Brierley JD, Gaspar LE, Schilsky RL, Balch CM, Winchester DP, Asare EA, Madera M, Gress DM and Meyer LR (eds) (2017). *AJCC Cancer Staging Manual. 8th ed.*, Springer, New York.  |  |
| Non-core | PERINEURAL INVASION | * Not identified
* Present
 | The significance of perineural invasion in prostate TURP or enucleation specimens is uncertain and there is little published literature specific to these particular specimen types. In core needle biopsy a systematic review of the literature concluded that in clinically localised disease perineural invasion was a significant prognostic factor for extraprostatic extension (EPE) and subsequent local recurrence.1 Hence, it may be significant and perineural invasion should be recorded when present in TURP and enucleation specimens. **Reference**1 Harnden P, Shelley MD, Clements H, Coles B, Tyndale-Biscoe RS, Naylor B and Mason MD (2007). The prognostic significance of perineural invasion in prostatic cancer biopsies: a systematic review. *Cancer* 109(1):13-24.  |  |
| Non-core | COEXISTENT PATHOLOGY | * Not identified
* Present, *specify*
 | In some cases clinical management decisions may be aided by knowledge of coexisting pathology, such as high grade prostatic intraepithelial neoplasia (HGPIN), glandular atypia suspicious for malignancy (atypical small acinar proliferation (ASAP)), atypical intraductal proliferation (AIP), granulomatous prostatitis etc.If there is carcinoma present, the presence of HGPIN is generally not significant, except perhaps occasionally in the situation where the carcinoma is of very limited extent. Low grade prostatic intraepithelial neoplasia (PIN) should not be reported.Likewise, if there is carcinoma present in a specimen, the presence of glandular atypia suspicious for malignancy (ASAP) is generally not significant, except perhaps in situation where the carcinoma is of very limited extent. In undergoing TURP specimens where there is no cancer identified but ASAP is present, the risk of carcinoma being present in subsequent specimens is not known, but in core biopsies is approximately 35%.1-5Atypical intraductal proliferation (AIP) is the preferred term to describe intraductal neoplasm that has complexity or atypia greater than HGPIN but falls short for the diagnosis of IDC-P.6-9 AIP is characterised by loose cribriform proliferation and/or nuclear atypia falling short for IDC-P and encompasses what was previously known as cribriform HGPIN. Because of the association of AIP with IDC-P, documenting their presence in biopsy is recommended especially in lower grade prostate cancers. Presence of AIP alone in biopsy specimens is uncommon and is managed with repeat follow-up biopsy. Lesions of the prostatic urethra, e.g., urothelial carcinoma in situ (CIS), urethral polyps, nephrogenic adenoma, villous adenoma etc., should also be recorded if present. Active prostatitis and granulomatous prostatitis may cause a rise in serum PSA, although inflammatory lesions may coexist with carcinoma and it is important not to assume that their presence always accounts for an unexplained or disproportional increase in a patient’s PSA.10-12**References** 1 Ericson KJ, Wenger HC, Rosen AM, Kiriluk KJ, Gerber GS, Paner GP and Eggener SE (2017). Prostate cancer detection following diagnosis of atypical small acinar proliferation. *Can J Urol* 24(2):8714-8720.2 Leone A, Gershman B, Rotker K, Butler C, Fantasia J, Miller A, Afiadata A, Amin A, Zhou A, Jiang Z, Sebo T, Mega A, Schiff S, Pareek G, Golijanin D, Yates J, Karnes RJ and Renzulli J (2016). Atypical small acinar proliferation (ASAP): Is a repeat biopsy necessary ASAP? A multi-institutional review. *Prostate Cancer Prostatic Dis* 19(1):68-71.3 Mancuso PA, Chabert C, Chin P, Kovac P, Skyring T, Watt WH and Napaki S (2007). 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**Tables**

## **Table 1: World Health Organization classification of tumours of the prostate.3**

| **Descriptor** | **ICD-O codesa** |
| --- | --- |
| **Epithelial tumours of the prostate** |  |
| *Glandular neoplasms of the prostate* |  |
| Cystadenoma  | 8440/0 |
| Prostatic intraepithelial neoplasia, high grade  | 8148/2 |
| lntraductal carcinoma | 8500/2 |
| Acinar adenocarcinoma | 8140/3 |
| Signet-ring cell-like acinar adenocarcinoma | 8490/3 |
| Pleomorphic giant cell acinar adenocarcinoma | 8140/3 |
| Sarcomatoid acinar adenocarcinoma | 8572/3 |
| Prostatic intraepithelial neoplasia-like carcinorna | 8140/3 |
| Ductal adenocarcinoma | 8500/3 |
| Adenocarcinoma with neuroendocrine differentiation | 8574/3 |
| *Squamous neoplasms* *of the prostate* |  |
| Adenosquamous carcinoma | 8560/3 |
|  Squamous cell carcinoma | 8070/3 |
|  Adenoid cystic (basal cell) carcinoma† | 8147/3 |
| **Mesenchymal tumours unique to the prostate** |  |
| *Stromal tumours of the prostate* |  |
| Stromal tumour of uncertain malignant potential | 8935/1 |
| Stromal sarcoma | 8935/3 |

a These morphology codes are from the International Classification of Diseases for Oncology, third edition, second revision (ICD-0-3.2).4 Behaviour is coded /0 for benign tumours; /1 for unspecified, borderline, or uncertain behaviour: /2 for carcinoma in situ and grade Ill intraepithelial neoplasia; /3 for malignant tumours, primary site: and /6 for malignant tumours, metastatic site. Behaviour code /6 is not generally used by cancer registries. Subtype labels are indented. Incorporates all relevant changes from the 5th edition Corrigenda, July 2024.5

† Labels marked with a dagger have undergone a change in terminology of a previous code.

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3 Kench JG, Berney DM, De Marzo A, et al. Prostatic acinar adenocarcinoma. In: *Urinary and Male Genital Tumours, WHO Classification of Tumours, 5th edition, Volume 8*, IARC Publications, Lyon; 2022; 203-219.

4 Fritz A, Percy C, Jack A,  Shanmugaratnam K, Sobin L, Parkin DM  and Whelan S (eds) (2020). *International Classification of Diseases for Oncology, Third edition, Second revision ICD-O-3.2*. Available from: http://www.iacr.com.fr/index.php?option=com\_content&view=category&layout=blog&id=100&Itemid=577 (Accessed 2nd July 2024).

5 WHO Classification of Tumours Editorial Board (2022). *Urinary and Male Genital Tumours, WHO Classification of Tumours, 5th edition, Volume 8 - Corrigenda July 2024.* Available from: file:///C:/Users/fleurw/Downloads/Uro5%20Corrigenda%20doc\_2024-07-08%20(1).pdf (Accessed 2nd July 2024).

**Table 2: World Health Organization (WHO)/International Society of Urological Pathology** **(ISUP) grading system, core needle biopsies and transurethral resection of the prostate (TURP) specimens.13,21**

|  |  |  |
| --- | --- | --- |
| **ISUP Grade (Grade Group)** | **Gleason score** | **Definition** |
| Grade 1 | 2-6 | Only individual discrete well-formed glands |
| Grade 2 | 3+4=7 | Predominantly well-formed glands with lesser component (\*) of poorly- formed/fused/cribriform glands |
| Grade 3 | 4+3=7 | Predominantly poorly-formed/fused/cribriform glands with lesser component (\*\*) of well-formed glands |
| Grade 4 | 4+4=8 | Only poorly-formed/fused/cribriform glands |
| 3+5=8 | Predominantly well-formed glands and lesser component (\*) lacking glands (or with necrosis)  |
| 5+3=8 | Predominantly lacking glands and lesser component (\*\*) of well-formed glands (or with necrosis)  |
| Grade 5 | 9-10 | Lack gland formation (or with necrosis) with or without poorly formed/fused/cribriform glands |

\* Any component of the high grade pattern (i.e., even if less than 5%) is included in the grade.

\*\* The low grade pattern is included in the grade only if it is at least 5%.

**References**

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21 Kench JG, Berney DM, De Marzo A, et al. Prostatic acinar adenocarcinoma. In: *Urinary and Male Genital Tumours, WHO Classification of Tumours, 5th edition, Volume 8*, IARC Publications, Lyon; 2022; 203-219.